

Claims

1. An apparatus for chemical mechanical polishing a surface of a workpiece, comprising:

a housing configured to encase a processing area, the processing area including,

a wafer loading and unloading station;

a plurality of polishing areas; and

a handler configured to include a leaf structure rotatably coupled to a turret, the leaf structure including a pair of carrier devices designed to hold a pair of workpieces to be polished on at least one of the polishing areas,

wherein the pair of workpieces are capable of being polished substantially at the same time on the at least one of the plurality of the polishing areas.

2. An apparatus for chemical mechanical polishing a surface of a workpiece as recited in claim 1, wherein the leaf structure is configured to rotate about the turret so as to move the pair of workpieces between the loading and unloading area and the polishing area.

3. An apparatus for chemical mechanical polishing a surface of a workpiece as recited in claim 1, wherein each polishing area includes a polishing pad overlying a rotating platen assembly.

4. An apparatus for chemical mechanical polishing a surface of a workpiece as recited in claim 1, wherein each carrier device is configured to include an actuator designed to adjust the carrier device in a z-direction.

5 5. An apparatus for chemical mechanical polishing a surface of a
workpiece as recited in claim 1, wherein the leaf structure rotates horizontally about the
turret along a fixed plane.

10 6. An apparatus for chemical mechanical polishing a surface of a
workpiece as recited in claim 1, wherein the leaf structure includes a pair of fingers,
each finger designed to support the respective carrier device.

15 7. An apparatus for chemical mechanical polishing a surface of a
workpiece as recited in claim 6, wherein each finger includes a stop.

20 8. An apparatus for chemical mechanical polishing a surface of a
workpiece as recited in claim 1, wherein each carrier device includes an upper stop
assembly configured to absorb a sudden movement of the carrier device in a z-
direction.

25 9. A chemical mechanical polishing apparatus, comprising:
a polishing area;
a leaf structure rotatably coupled to a turret, the leaf structure having a
pair of fingers, each finger configured to include a carrier device designed to hold a
workpiece to be polished, each carrier device configured to apply each of the
workpieces onto the polishing area.

30 10. A chemical mechanical polishing apparatus of claim 9, wherein
each carrier device rotates about the turret along a common axis.

11. A chemical mechanical polishing apparatus of claim 9, wherein
each carrier device includes an actuator to adjust the carrier device in a direction
perpendicular to the polishing area.

5 12. A chemical mechanical polishing apparatus of claim 9, wherein
the leaf structure is configured to rotate about the turret independently so as to move the
workpiece between a loading and unloading area and the polishing area.

 13. A chemical mechanical polishing apparatus of claim 9, wherein
10 the polishing area includes a polishing pad overlying a rotating platen.

 14. A chemical mechanical polishing apparatus of claim 9, wherein
the carrier device is configured to include an actuator designed to adjust the carrier
device in a z-direction.

15 15. A chemical mechanical polishing apparatus of claim 9, wherein
each finger includes a stop, the stop being configured to prevent the leaf structure from
colliding as the leaf structure rotates about the turret.

20 16. A chemical mechanical polishing apparatus of claim 9, wherein
each carrier device includes an upper stop assembly configured to absorb a sudden
movement of the carrier device in a z-direction.

25 17. A chemical mechanical polishing apparatus, comprising:
a single polishing pad;
a leaf structure having a pair of fingers, each finger configured to hold a
carrier device designed to hold a wafer to be polished, the leaf structure configured to
apply each of the wafers onto the single polishing pad.

30 18. A chemical mechanical polishing apparatus, comprising:
a plurality of polishing areas;
a pair of leaf structures rotatably coupled to a turret, each leaf structure
configured to include a pair of fingers, each pair of fingers configured to hold a pair of
carrier devices each designed to hold a workpiece to be polished,

5 wherein each pair of carrier devices is configured to be applied onto a
respective polishing area.

19. A chemical mechanical polishing apparatus of claim 18, wherein
each pair of carrier devices are applied onto the respective polishing area substantially
10 at the same time.

20. A chemical mechanical polishing apparatus of claim 18, wherein
the pair of leaf structures is configured to rotate about the turret in a scissors-like
manner.

15 21. A chemical mechanical polishing apparatus of claim 18, wherein
each leaf structure is configured to move an associated workpiece between a loading
and unloading area and the respective polishing area.

20 22. A chemical mechanical polishing apparatus of claim 18, wherein
each finger includes a stop, the stop being configured to prevent the pair of leaf
structures from colliding as the leaf structures rotate about the turret.